The Level of High School Student’s Awareness Toward Environment

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Abstract: This study aims to determine the level of environmental awareness among high school students in Indonesia and Malaysia. Environmental awareness is one of indicators in science and technology culture and measured by using Instrument of Science and Technology Culture. The research method is survey, conducted towards high school students in Indonesia (Java and Sumatra) and Malaysia (semenanjung). The data were analyzed by using descriptive statistics. This research results that Malaysian high school students have higher awareness level of human behavior that cause environmental problems (68 %), compared to Indonesian high school students (39 %). The similar result was also found that Indonesian high school students have low expectations toward the future of the environment (12 %) while Malaysian high school students is more optimistic about environment future (38 %). It means that teachers and other stakeholders in education are strongly encouraged to give deep and holistic explanation on environmental problems to high school students.

Keywords: High School Students, awareness, environment, science characteristics, basic science.

INTRODUCTION

Group researcher of TIMSS (Trends in International Mathematics and Science Study) has developed frameworks to measure understanding of science and technology among high school students around the world. Understanding of science and technology is a central knowledge and plays important role in modern society [6]. In addition, understanding of science and technology gives significant contribution to individual, community, professionalism, and cultural life of every person. Therefore, the study of science and technology education now is not only focused on pedagogy of science education and technology, but also has evolved in many multidisciplinary fields such as environmental science education research [1], culture of science education research and technology [3,4], science technology and society education and scientific literacy education.

The level of measurement of existence or manifestation of science and technology culture among high school students includes 9 indicators, namely (1) attitude towards Science and Technology, (2) environmental awareness, (3) nature of scientific knowledge, (4) ethics of science and technology, (5) attitudes towards use of trial test, (6) understand the limitations of human mind, (7) my view related to the following indicators, (8) the habit of scientific-minded students, (9) Science student activities outside of school, and (10) basic knowledge of science [3,7,8].

Environmental Awareness in this study is high school students’ awareness towards environment around their schools or neighborhoods. In context of science and technology culture study, environmental awareness is one of the most relevant indicators that have high contribution to science and technology culture among high school students. This fact is showed by the results of validity of science and technology culture instrument that is 0.81 for alpha Crombak and 0.99 for Reliability of indicator of students’ awareness toward the environment [8].

As an effort to enrich the knowledge, especially related to science and technology education. Through this research will be assessed the level of environmental awareness to high school students in Indonesia and Malaysia. This research purpose specifically on students’ views and perception of: (1) role of science and technology in solving environmental problems, (2) future of environment, (3) The equal right of lives towards human and
animals, (4) society’s awareness on environment, (5) society’s responsibility towards environment, and (6) human activity as one of causes that trigger environmental problems.

**METHODOLOGY AND DISCUSSION**

This study used survey technique towards 467 high school students in Indonesia (Java and Sumatra) and 690 high school students in Malaysia (peninsula), the respondents are aged 15-17 years old. Data was collected by using instrument of Science and Technology Culture, where one of indicators is students’ awareness toward environment. Based on indicator of environmental awareness is developed eight items, namely; (1) Environmental problem can be solved by science and technology, (2) I believe the future of our environment, (3) Animals have the same right to life as humans, (4) We need to get a solution to our environmental problems, (5) Society need to be aware or sensitive to the problem environment, (6) Society need to be responsible for protecting the environment, (7) Human activity is a cause of environment problem, and (8) We need to provide a meaningful contribution to protecting the environment.

The pattern of students’ response use questionnaire and Likert scale by 5 points, namely 1 = Strongly Agree (SS), 2 = Agree (S), 3 = No Knowledge (TP), 4 = Disagree (TS), 5 = Strongly Disagree (STS). The instrument (only for indicators of awareness of environment) are shown in Table 1, below.

**TABLE 1.** Indicators and environmental awareness Item

<table>
<thead>
<tr>
<th>No</th>
<th>Section B: Awareness toward environment</th>
<th>SS</th>
<th>S</th>
<th>TP</th>
<th>TS</th>
<th>STS</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>Environmental problem can be solved by science and technology</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>B2</td>
<td>I am optimistic about the future of our environment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>B3</td>
<td>Animal should have the same right to life as people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>B4</td>
<td>We should find solution to our environmental problem</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>B5</td>
<td>Society should be aware about environmental problem</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>B6</td>
<td>Society should care more about protection of the environment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>B7</td>
<td>Human activity is a cause of environment problem</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>B8</td>
<td>Each one of us should make a significant contribution to environmental protection</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

(Source: Halim.et.al. 2009)

Based on 5 point Likert scale above is developed students’ levels of awareness toward environment, as shown in Table 2 below.

**TABLE 2.** Levels of awareness based on the Likert scale 5 points (1 – 5)

<table>
<thead>
<tr>
<th>No.</th>
<th>Range of Likert scale</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.00 – 2.44</td>
<td>Have a high awareness</td>
</tr>
<tr>
<td>2</td>
<td>2.45 – 3.44</td>
<td>Have a medium awareness</td>
</tr>
<tr>
<td>3</td>
<td>3.45 – 4.44</td>
<td>Have a low awareness</td>
</tr>
<tr>
<td>4</td>
<td>4.45 – 5.00</td>
<td>There is absolutely no awareness</td>
</tr>
</tbody>
</table>

(Sources: Jack R. Fraenkel. 2011)

Each item is examined, analyzed with descriptive statistics refer to Table 2 above. The results of the data analysis are shown in figure 1 below. The graph in Figure 1 represents the response pattern of 690 high school students in Malaysian Peninsula on 8 items of environmental awareness indicator (B1 to B8). Based on measurement, shows that item B8 has the largest average that is 2.3.

There is indication that students are less aware of importance of given thoughts and ideas to solve environmental problems. This view can be justified, due to education at high schools in Malaysia do not much involves...
environmental problem solving activities scientifically. Therefore, science teachers are strongly encouraged to provide training or learning project activities associated with forms of project solution for environmental problems through the use of ideas or thoughts.

In contrast, Malaysian high school students have very high awareness related to item B2, namely the believe towards environmental sustainability in the future. If we research and observed, the way of Malaysian government address environmental issues create high awareness to the students. One of the government actions are regulations on reducing forest fires, prohibiting illegal logging, giving punishment for people who pollute the environment, and other forms of legislation. All these laws aim to preserve environment. Whether through learning in school or through observation of law implementation in everyday life, unconsciously students build awareness and assure about future of environment.

The results of data analysis for Indonesian high school students' responses are shown in Figure 2 below. Extreme response found on items B2 with average of Likert scale 2.6. Based on data analysis can be inferred that awareness of Indonesian high school students is at middle level. It means that students are unsure or less optimistic about the
future sustainability of the environment in Indonesia. It is caused by lacking of attention or efforts by government to protect environment. The fact that government less commitment in implementing regulation of forest protection and giving punishments to people who violate the laws, where at the end triggers many illegal logging and deforestation. This phenomena create less assure or optimistic attitude on the students toward future forest environment in Indonesia. The highest awareness shown by students in Indonesia is related to the role and responsibility of community to preserve the environment. It shown by students’ responses on item B5 and B6 with average of Likert scale is 1.2. Based on the response can be inferred that high schools students in Indonesia put more trust on community to protect environment rather than government.

Comparison of level of high school students' environmental awareness in Indonesia and Malaysia were analyzed using t-test with different amount of respondent. The results of data analysis provided average response 1,907 for Malaysian and 1,667 for Indonesian. While the results of value-t calculation obtained 9.7. Based on the degree of freedom from total of respondent of high school students in Malaysia and Indonesia provided T table 2.58. Both t and T values as statistic show significant difference with significant level of 0.05 and probability P = 0.00. As the result, it shows that in overall high school students in Indonesia have higher levels of environmental awareness than the students in Malaysia. But, the Malaysian students have higher level of environmental awareness compared to the Indonesian students at certain items.

CONCLUSION

In overall, high school students in Indonesia have level of environmental awareness better than the Malaysian students. But, Malaysian high school students have higher level of environmental awareness on certain items compared to Indonesian high school students. For example is item B2, level of Malaysian high school students (1.6) is higher consciousness than the Indonesian high school students (2.5). Based on data analysis, can be inferred that the level of environmental awareness of Indonesian high schools students is at middle category. It indicates that Indonesian students are not sure or less optimist towards environmental sustainability in Indonesia. Students’ low awareness and belief due to less commitment by government in protecting our environment.

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